Consequently, there is no potential risk of radiotoxic effects to a population of generic riparian plants, and the risk of potential radiotoxic effects to a population of generic riparian vertebrates would be minimal from these radioactive constituents in surface water. Consequently, it follows that there would be minimal risk to the bald eagle, southwestern willow flycatcher, and western yellow-billed cuckoo, the only consultation species thought to be potentially present at the Moab site (see Sections A1−8.1.4, A1−8.1.7, and A1−8.1.9, respectively).

The results of the RESRAD assessment indicate that the actual dose rates to terrestrial animals are below a population-level effect. There are no guidelines for radiological effects to individuals, which is important in evaluating impacts to threatened and endangered species. The studies resulting in the 0.1-rad/day criterion for terrestrial animals were based on exposures to organisms for 1 year, and then normalized to a dose rate based on a day. One could interpret these results to mean that a dose rate of 0.1 rad/day, if sustained for a year, would have an effect on some individuals but not on the population as a whole. Based on the results of the RESRAD assessment and on the fact that the bald eagle, southwestern willow flycatcher, and western yellow-billed cuckoo would be present at the Moab site only seasonally, if at all, radionuclides are not expected to adversely affect these species.

Evaporation Pond(s). Potential impacts that could result from the construction and operation of one or more evaporation ponds include contaminant impacts to wildlife. The evaporation pond(s) could attract wildlife that could be affected due to contaminant exposure through ingestion of contaminated prey and water, dermal uptake of contaminated water and airborne contaminants, and inhalation of airborne contaminants. The bald eagle, southwestern willow flycatcher, and western yellow-billed cuckoo are the only terrestrial consultation species considered to be potentially present at the Moab site. Potential impacts to these species in connection with the evaporation pond(s) are discussed in Sections A1−8.1.4, A1−8.1.7, and A1−8.1.9, respectively.

A1−9.0 Determinations and Conclusions

The potential impacts of the action alternatives and the No Action alternative include physical, chemical, and/or radiological impacts as assessed in Sections A1−7.2 and A1−8.2. The degree and duration of the impacts would vary depending upon location, remediation methods, remediation goals, remediation period, transportation modes, and the potential presence of species and habitats.

DOE has made determinations regarding effects to federal threatened, endangered, and candidate species based on the information and assessment presented in Sections A1−7.0 and A1−8.0. This information was obtained in consultation with USF&WS and other federal and State agencies (e.g., BLM, UDWR). Because DOE's on-site and off-site remediation alternatives propose improvements to the existing environment, the determinations are made based on DOE's proposed actions and not on the effects of existing impacts (No Action alternative). It is emphasized that DOE's proposed action alternatives would mitigate existing risks to endangered species caused by historical surface and ground water contamination.

The determinations were made using the guidance provided in Chapter 3 of the USF&WS *Endangered Species Consultation Handbook* (USF&WS 1998b). These determinations serve as the basis for USF&WS to reach a jeopardy, or no jeopardy, finding in the Biological Opinion

(Appendix A3). They also serve as the basis for USF&WS to authorize a "take," if applicable. A "take" may be authorized if an action will not jeopardize the continued existence of a species.

As defined in the guidance (USF&WS 1998b), the three categories of effects that are considered in this BA are:

No Effect—There is sufficient evidence that the species and habitat (including critical and potentially suitable habitat) would not be affected. This determination is based on consultation with USF&WS and other federal and State agencies (e.g., BLM, UDWR).

May affect, not likely to adversely affect—Effects to species and critical habitat are discountable, insignificant, or completely beneficial. In most cases, in this BA, this determination would be a result of discountable effects. Discountable effects are those that are extremely unlikely to occur.

May affect, likely to adversely effect—Adverse effects to species and critical habitat are direct or indirect, including interrelated and interdependent actions.

Three plant species (Navajo sedge, Jones' cycladenia, and clay phacelia), and the California condor are not known or suspected to occur at any of the proposed project sites or within transportation corridors. DOE has determined that the proposed alternatives, including the No Action alternative, would have "no effect" on these species. DOE has not made a determination for the white-tailed prairie dog based on the current status (candidate review) of this species. Therefore, these species are not discussed further.

In addition, DOE has made a determination of "no effect" for all species for proposed remediation of vicinity properties. These locations have been historically disturbed and are located in urbanized areas (e.g., private residences and commercial properties) in the vicinity of the Moab site. No aquatic species would be present on vicinity properties, and suitable habitat does not exist for avian or terrestrial species at vicinity property locations.

Section A1−9.1 discusses determinations for the on-site surface disposal alternative. Section A1−9.2 discusses determinations for the off-site surface disposal alternatives. Section A1−9.3 discusses determinations for the ground water remediation aspects of both the on-site and off-site alternatives. Section A1−9.4 discusses determinations for the No Action alternative. Section A1−9.5 summarizes the conclusions and determinations.

A1−9.1 Determinations for the On-Site Disposal Alternative

Table A1−5 summarizes DOE's determinations for aquatic and terrestrial species for the on-site disposal alternative and the effects at borrow locations and haul routes for borrow materials.

These determinations would be associated with short-term surface remediation activities (within 5 to 10 years of the ROD). Once remediation was complete, there would be "no adverse effect" to any of these species. Effects associated with ground water remediation are addressed in Section A1−9.3.

Table A1−5. Summary of DOE Determinations for the On-Site Surface Disposal Alternative

Species	Scientific Name	On-Site Effects	Borrow Location and Haul Route Effects
BIRDS			
Bald eagle	*Haliaeetus leucocephalus*	May affect, not likely to adversely affect	May affect, not likely to adversely affect
Gunnison sage grouse	*Centrocercus minimus*	No effect	No effect
Mexican spotted owl	*Strix occidentalis lucida*	May affect, not likely to adversely affect	May affect, not likely to adversely affect
Southwestern willow flycatcher	*Empidonax traillii extimus*	May affect, not likely to adversely affect	No effect
Western yellow-billed cuckoo	*Coccyzus americanus*	May affect, not likely to adversely affect	No effect
MAMMALS			
Black-footed ferret	*Mustela nigripes*	No effect	May affect, not likely to adversely affect
FISH			
Bonytail	*Gila elegans*	May affect, not likely to adversely affect	No effect
Colorado pikeminnow	*Ptychocheilus lucius*	May affect, not likely to adversely affect	No effect
Humpback chub	*Gila cypha*	May affect, not likely to adversely affect	No effect
Razorback sucker	*Xyrauchen texanus*	May affect, not likely to adversely affect	No effect

On-site Effects

The bald eagle, southwestern willow flycatcher, and western yellow-billed cuckoo have been reported near the Moab site, but their presence is seasonal and likely infrequent due to their migratory nature. Potential habitat exists for the Mexican spotted owl west of the site, although not close to the site. Therefore, potential effects on these species would be considered discountable.

Endangered fish species are not likely to be affected by physical or mechanical disturbances and noise associated with the preparation of the on-site disposal cell. Therefore, potential effects would be discountable.

Borrow Locations and Haul Routes

Bald eagles are not known to occur close to the borrow locations and haul routes, although potential high-quality wintering habitat is reported to be in the vicinity. Although potentially suitable habitat for the Mexican spotted owl has been identified to the west of the haul routes, it is of sufficient distance to preclude disturbance above that caused by common recreational vehicle use in the area. Therefore, potential effects on these species would be considered discountable.

The black-footed ferret has been confirmed as not being present at the Moab site. However, there is potentially suitable habitat, based on the location and size of prairie dog colonies, relatively close to some borrow locations and haul routes. Final selection of borrow areas would exclude any sites that would adversely affect endangered species.

Endangered fish species are not present at the borrow locations. Some of the haul routes do cross the Colorado River, and accidental spills could introduce a small quantity of borrow material into the Colorado River. However these effects would be discountable or insignificant.

Disposal Cell Failure From Natural Phenomena

DOE has determined that catastrophic failure of the disposal cell from sudden or catastrophic lateral migration of the Colorado River into the Moab site for the pile design period of 200 to 1,000 years does not pose a realistic hazard. DOE has evaluated the hydrologic and geologic conditions of the northwestern portion of Spanish Valley and the Colorado River corridor at Moab (See Sections 3.1.1, 3.1.6, and 3.1.7 of the EIS). Given the known geologic and hydrologic context, the likelihood of catastrophic failure, though not statistically quantified, is considered extremely unlikely. Consequently, on-site disposal may affect, but is not likely to adversely affect, endangered fish species in the Colorado River. However, in the extremely unlikely event that a catastrophic failure occurred, the impacts would likely adversely affect endangered fish species in the Colorado River from the Moab site to Lake Powell (see Section A1−7.2).

If mitigated, long-term failure would not likely result in negative impacts to aquatic biota. DOE's Office of Legacy Management is responsible for monitoring and mitigating this type of release. In addition, all currently available evaluations of the site's geologic and hydrologic conditions suggest that future lateral migration of the river will tend toward the east, away from the site (see Table 2−33, No.10 in the EIS). Further, DOE has incorporated a buried riprap diversion wall into the on-site disposal design to mitigate potential impacts should lateral river migration occur. It has been estimated that this engineering control could easily be enhanced, expanded, and/or modified in the future should river migration encroach on the site and the disposal cell. Consequently, on-site disposal may affect, but is not likely to adversely affect, endangered fish species in the Colorado River. However, in the unlikely event that long-term failure occurred, the impacts would likely adversely affect endangered fish species in the Colorado River adjacent to the Moab site.

There would be short-term adverse effects to the endangered fish if natural processes caused a catastrophic failure of the on-site disposal cell at the Moab site. Long-term failure of the on-site disposal alternative may affect, but is not likely to adversely affect, the endangered fish. While the contaminant load to the water and sediment is likely to increase, the effects of sediment loading is likely to be offset by new habitat being created in other locations.

A1−9.2 Determinations for the Off-Site Disposal Alternative

Table A1−6 summarizes DOE's determinations for terrestrial and aquatic species for the off-site disposal alternative. The determinations consider on-site effects related to preparation of tailings for transportation, effects associated with transportation to the off-site disposal location, and effects at the off-site disposal location. If a species may be affected either at the Moab site, at an off-site disposal location, or along a transportation route, a "may affect" determination is indicated.

Table A1−6. Summary of DOE Determinations for the Off-Site Surface Disposal Alternative

Species	Scientific Name	On-Site Effects	Off-Site Effects		
			Klondike Flats	Crescent Junction	White Mesa
BIRDS					
Bald eagle	*Haliaeetus leucocephalus*	May affect, not likely to adversely affect	May affect, not likely to adversely affect	May affect, not likely to adversely affect	May affect, not likely to adversely affect
Gunnison sage grouse	*Centrocercus minimus*	No effect	No effect	No effect	May affect, not likely to adversely affect
Mexican spotted owl	*Strix occidentalis lucida*	May affect, not likely to adversely affect	May affect, not likely to adversely affect	May affect, not likely to adversely affect	May affect, not likely to adversely affect
Southwestern willow flycatcher	*Empidonax traillii extimus*	May affect, not likely to adversely affect	No effect	No effect	May affect, not likely to adversely affect
Western yellow-billed cuckoo	*Coccyzus americanus*	May affect, not likely to adversely affect	No effect	No effect	No effect
MAMMALS					
Black-footed ferret	*Mustela nigripes*	No effect	May affect, not likely to adversely affect	May affect, not likely to adversely affect	May affect, not likely to adversely affect
FISH					
Bonytail	*Gila elegans*	May affect, not likely to adversely affect	No effect	No effect	May affect, not likely to adversely affect
Colorado pikeminnow	*Ptychocheilus lucius*	May affect, not likely to adversely affect	No effect	No effect	May affect, not likely to adversely affect
Humpback chub	*Gila cypha*	May affect, not likely to adversely affect	No effect	No effect	May affect, not likely to adversely affect
Razorback sucker	*Xyrauchen texanus*	May affect, not likely to adversely affect	No effect	No effect	May affect, not likely to adversely affect

These determinations would be associated with short-term surface remediation activities (within 5 to 10 years of the ROD). Once remediation was complete, there would be "no adverse effect" to any of these species. Effects associated with borrow locations and borrow haul routes have been addressed in Section A1−9.1 and are not addressed again in this section. Effects associated with ground water remediation are addressed in Section A1−9.3.

On-site Effects Associated with Tailings Preparation

If an off-site disposal site were selected in the ROD, remediation activities would still occur at the Moab site (i.e., those associated with preparing the tailings for transportation). The potential effects to the bald eagle, Mexican spotted owl, southwestern willow flycatcher, and western yellow-billed cuckoo, as well as for the endangered fish species, would be similar to those described for the on-site surface disposal alternative under Section A1−9.1 and are therefore considered discountable.

Klondike Flats Alternative

At this proposed disposal cell location, the only species of concern are the bald eagle and black-footed ferret due to the possible occurrence of associated suitable habitat. Based on available information, it is unlikely that these species are present; therefore, potential adverse effects would be considered discountable.

The bald eagle, Mexican spotted owl, and black-footed ferret are the species of concern along the three proposed transportation corridors (truck, rail, and pipeline) due to the possible occurrence of associated suitable habitat. Based on available information, it is unlikely that these species are present; therefore, potential adverse effects would be considered discountable.

Endangered fish species are not present at Klondike Flats, and the routes for transporting material to the location do not cross critical habitat. Therefore, there would be "no effect."

Crescent Junction Alternative

At this proposed disposal cell location, the only species of concern are the bald eagle and black-footed ferret due to the possible occurrence of associated suitable habitat. Based on available information, it is unlikely that these species are present; therefore, potential adverse effects would be considered discountable.

For the three transportation corridors, the potential effects would be similar to those described for the Klondike Flats alternative and would therefore be considered discountable.

Endangered fish species are not present at Crescent Junction, and the routes for transporting material to the location do not cross critical habitat. Therefore, there would be "no effect."

White Mesa Mill Alternative

At the White Mesa Mill disposal cell location, no effects are anticipated because the White Mesa mill is an operating site under an NRC license. The "may effect" determinations in Table A1−6 are based on potential effects associated with the two transportation corridors (truck and pipeline). Transportation by rail is not included as an alternative in the EIS and therefore was not considered in making the determinations in Table A1−6.

The species listed in Table A1−6 are not expected to be adversely affected by use of the truck corridor, since it is currently a state highway. If species were present close to the highway, the effects would be considered discountable.

With the exception of the western yellow-billed cuckoo, all the species listed in Table A1−6, or associated suitable habitat, could be present along the pipeline corridor. Because of the diversity of vegetation and life zones, this corridor presents the greatest potential for species presence or the presence of potentially suitable habitat. As a result, this corridor presents the greatest potential for adverse effects.

The potential for adverse impacts to the bald eagle and southwestern willow flycatcher exists wherever riparian areas are present along the slurry pipeline corridor, particularly where the route would cross the Colorado River. Based on available information, it is unlikely that these

species are present; therefore, potential adverse effects would be considered discountable. There is the potential for the Gunnison sage grouse and associated habitat to be present along the pipeline corridor. However, there is no indication that the route would cross any essential habitat areas (e.g., "leks"). Therefore, if the species was present, these effects would be considered insignificant. Potentially suitable habitat for the Mexican spotted owl also exists in the vicinity of the pipeline corridor. Based on available information, it is unlikely that this species is present; therefore, potential adverse effects would be considered discountable.

Although the potential exists for black-footed ferret habitat to occur in the vicinity of some segments of the pipeline corridor, such occurrence is unlikely. Therefore, potential effects are considered discountable.

Endangered fish species are not present at the White Mesa Mill. However, the routes for transporting material to the location cross critical habitat in the Colorado River. There is the possibility that an accidental spill of contaminated soil could introduce material into the river. However, these effects would be discountable.

A1−9.3 Determinations for Ground Water Remediation

Active ground water remediation is proposed for the on-site and the three off-site alternatives. All remediation activities would occur within the existing millsite boundary. Determinations are based on meeting the remediation goals stated in Section A1−4.3.2 and implementation and operation schedules stated in Section A1−4.3.5. The active remediation system would extract and treat ground water for 75 to 80 years (depending on whether an off-site or on-site remediation alternative were implemented) to maintain surface water quality goals. The length of the remediation period required to achieve compliance under off-site disposal would be about 5 years shorter than under on-site disposal (Table A1−7). The contaminant concentrations in the ground water would thus be reduced to acceptable risk levels prior to entry into the Colorado River. Active remediation would cease only after ground water and surface water monitoring confirmed that long-term remediation goals were achieved and after appropriate consultation and concurrence with USF&WS. This information is summarized in Table A1−7 for the three major post-ROD project phases. It assumes that remediation goals would not be fully met as a result of the initial and interim actions described in Section A1−4.3.3.

Table A1−7. Schedule for Meeting Ground Water Remediation Goals

Post-ROD Project Phase	Remediation Goals Achieved ?	
	On-site Alternative	Off-site Alternative
Pre-remediation (within 10 years of the ROD)	No	No
Remediation – On-site disposal (within 80 years of the ROD)	Yes	NA
Remediation – Off-site disposal (within 75 years of the ROD)	NA	Yes
Post-remediation	Yes	Yes

Table A1−8 summarizes DOE determinations for effects to terrestrial and aquatic species, as a result of ground water remediation, for both the on-site and off-site disposal alternatives. For terrestrial receptors, determinations are based on (1) disturbances associated with ground water remediation activities and (2) exposure to concentrated contaminants that could occur in an evaporation pond if a pond were used during ground water remediation.

Table A1−8. Summary of DOE Ground Water Remediation Determinations

Common Name	Scientific Name	Pre-Remediation	During Remediation	Post-Remediation
BIRDS				
Bald eagle	*Haliaeetus leucocephalus*	May affect, not likely to adversely affect	May affect, not likely to adversely affect	May affect, not likely to adversely affect
Gunnison sage grouse	*Centrocercus minimus*	No effect	No effect	No effect
Mexican spotted owl	*Strix occidentalis lucida*	May affect, not likely to adversely affect	May affect, not likely to adversely affect	May affect, not likely to adversely affect
Southwestern willow flycatcher	*Empidonax traillii extimus*	May affect, not likely to adversely affect	May affect, not likely to adversely affect	May affect, not likely to adversely affect
Western yellow-billed cuckoo	*Coccyzus americanus*	May affect, not likely to adversely affect	May affect, not likely to adversely affect	May affect, not likely to adversely affect
FISH				
Bonytail	*Gila elegans*	May affect, **likely** to adversely affect	May affect, not likely to adversely affect	May affect, not likely to adversely affect
Colorado pikeminnow	*Ptychocheilus lucius*	May affect, **likely** to adversely affect	May affect, not likely to adversely affect	May affect, not likely to adversely affect
Humpback chub	*Gila cypha*	May affect, **likely** to adversely affect	May affect, not likely to adversely affect	May affect, not likely to adversely affect
Razorback sucker	*Xyrauchen texanus*	May affect, **likely** to adversely affect	May affect, not likely to adversely affect	May affect, not likely to adversely affect
MAMMALS				
Black-footed ferret	*Mustela nigripes*	No effect	No effect	No effect

There would be no effect on the Gunnison sage grouse or black-footed ferret from ground water remediation construction and operation or from an evaporation pond, since neither of these species or associated suitable habitat is present at the Moab site.

The bald eagle, southwestern willow flycatcher, and western yellow-billed cuckoo are the only consultation species considered to be potentially present at the Moab site. If present, they could be affected by ground water remediation construction and operation and by an evaporation pond. However, disturbance resulting from ground water remediation would probably be less than that resulting from surface remediation under the on-site disposal alternative. Because the potential effects of surface remediation under the on-site disposal alternative are considered discountable (see Section A1−9.1), the potential effects of ground water remediation should also be considered discountable. Potential effects on the bald eagle, southwestern willow flycatcher, and yellow-billed cuckoo from an evaporation pond would be considered discountable due primarily to a lack of habitat nearby for these species, as explained in Sections A1−8.1.4, A1−8.1.7, and A1−8.1.9, respectively.

The Mexican spotted owl is not considered to be potentially present at the Moab site, based solely on distance to critical habitat (located a few miles south of the site) and potential habitat (located within the first 7 miles north of the site). Further, in the very unlikely event that the spotted owl were to occur at the Moab site, it would be unlikely to use the area where ground water remediation construction and operation would occur (within the millsite boundary) and the environs of the evaporation pond. The spotted owl primarily consumes rodents, and these would be unlikely to occur within the millsite boundary and the area where the evaporation pond would be constructed, since both areas have been previously disturbed and support little to no vegetation. Consequently, potential effects on the Mexican spotted owl due to ground water remediation activities and the presence of an evaporation pond are considered discountable.

If an evaporation pond were used as part of ground water remediation, it would be qualitatively monitored for general wildlife use. If any species that are the subject of this BA frequented the evaporation pond, DOE would consult with USF&WS to develop reasonable and prudent measures to discourage or prevent those species from using the pond. There would be no adverse evaporation pond effects upon completion of remediation (see "post-remediation" in Table A1−8).

During the pre-remediation phase (Table A1−8)), critical habitat for all four endangered fish species would likely continue to be adversely affected by historical contamination. As discussed in Section A1−7.2. As discussed in Section A1−7.1, the following endangered fish species and their life stage are most likely to be directly and adversely affected by site-related contamination: pikeminnow (all life stages with emphasis on drifting larvae and young-of-the-year), razorback sucker (stocked juveniles and adults, and naturally produced larvae and young-of-the-year) and bonytail (stocked juveniles and adults, and naturally produced larvae and young-of-the-year) (USF&WS 2004a). The closest population of humpback chub is downriver in Cataract Canyon and would be affected in the event of disposal cell failure, but this population is not affected by site-related contamination.

DOE, in consultation with USF&WS, has implemented and will continue to implement initial and interim actions to reduce the potential for "take" until the selected remedial action and methods are fully implemented. The time frame required for the selection and implementation of remedial actions and methods, during which the take could occur, is anticipated to be a maximum of 10 years from the date of the ROD (see pre-remediation phase in Table A1−7). As stated in Section A1−4.3.3, a reduction in contaminant concentrations in surface water could be observed significantly sooner than the 10-year time frame as a result of interim actions.

During the remediation and post-remediation phases in Table A1−8, effects on fish species and associated critical habitat would likely be insignificant or beneficial. Ground water and surface water would be monitored to determine if remediation goals were being met. USF&WS would be consulted at least annually on the results of monitoring. Long-term effects are consistent with the goals of the Upper Colorado River Endangered Fish Recovery Program.

A1−9.4 Determinations for the No Action Alternative

Selection of the No Action alternative would result in the continued contamination of the Colorado River at the Moab site, which is critical habitat for four endangered fish species. Terrestrial species that use riparian areas along the eastern boundary of the site would continue to be exposed to elevated contaminant concentrations in surface water.

Potential impacts to the bald eagle, southwestern willow flycatcher, and western yellow-billed cuckoo from elevated contaminant concentrations in surface water are discussed in Sections A1−8.1.4, A1−8.1.7, and A1−8.1.9, respectively. Under the No Action alternative, potential effects on all three species are considered unlikely and therefore discountable.

Elevated contaminant concentrations in the Colorado River are likely to adversely affect the Colorado pikeminnow, razorback sucker, bonytail, humpback chub, and designated critical habitat for all four species under the No Action alternative. Adverse impacts would continue to occur until ground water concentrations naturally attenuate to acceptable risk levels in the river. This is estimated to be 75–80 years after the ROD (Figure A1−9).

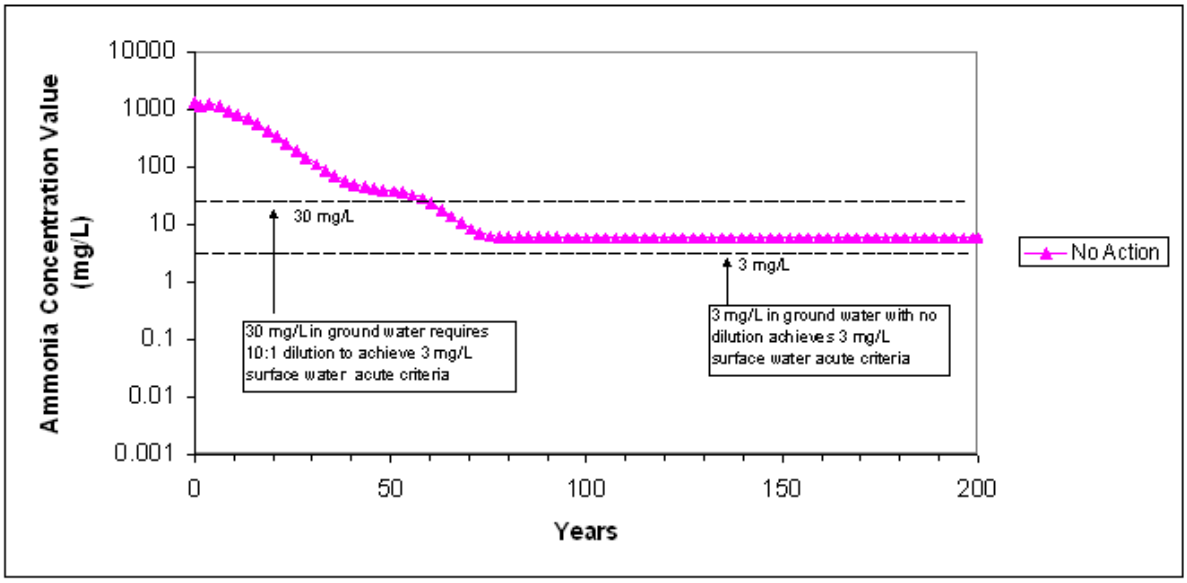

Figure A1−9. Predicted Maximum Ammonia Concentrations in Ground Water for the No Action Alternative

No species would be adversely affected at proposed off-site disposal locations, at borrow areas, or in the proposed transportation corridors under the No Action alternative.

A1−9.5 Conclusions

When the Moab site was assigned to DOE (October 2000) for remediation under UMTRCA, DOE considered the effects of existing contaminated media at the Moab site and determined that ground water is the only medium providing an exposure pathway. DOE further determined that ground water contamination reaching the Colorado River is presenting unacceptable risk to endangered species and critical habitat—in this case, four endangered fish species. Therefore, the conclusions presented below compare remediation alternatives considered in this BA and in the EIS in light of the determinations presented in Sections A1−9.1 through A1−9.4 for aquatic and terrestrial species.

On-Site and Off-Site Surface Disposal Alternatives

For the on-site surface disposal alternative, DOE has concluded that the proposed action would have no effect, or would be unlikely to adversely affect, terrestrial and aquatic consultation species.

For the off-site surface disposal alternatives, DOE has concluded that remediation activities at the proposed disposal locations and along transportation routes would result in no effect, or would be unlikely to adversely affect, terrestrial and aquatic consultation species. DOE may need to complete additional biological investigations and field surveys for terrestrial species, depending on the disposal location and transportation corridor selected in the ROD.

Of the off-site disposal locations, the White Mesa Mill site would be the least likely to affect terrestrial consultation species. The Klondike Flats site also would present minimal potential impacts. BLM has conducted extensive studies in this area, and none of the consultation species are known to occur in the vicinity. Further, placing a disposal facility at the Klondike Flats site would be consistent with existing land uses (e.g., county landfill). The Crescent Junction site is similar to the Klondike Flats site in that none of the consultation species are known to occur in the vicinity.

Of the transportation options, the slurry pipeline would present the greatest potential for affecting terrestrial consultation species, due to the need for new disturbance associated with pipeline construction, operation, and removal. Of the three pipeline corridors, the corridor to the White Mesa Mill site would present the greatest potential for adverse effects due to the diversity of habitat types present (see Section A1−8.1). It would also be the corridor requiring the greatest level of effort for additional field surveys and biological investigations.

In a comparison of the disposal alternatives, the on-site alternative would be less likely to affect terrestrial and aquatic consultation species. In the near term (75–80 years), the effect on aquatic species is similar for the on-site and off-site disposal alternatives; ammonia concentrations in ground water will exceed ammonia criteria unless ground water remediation takes place. By moving the tailings pile to an off-site location, ground water concentrations are predicted to fall below federal and state criteria in 75 years, about 5 years sooner than if the pile remains on site.

Ground Water Remediation

DOE is proposing ground water remediation under both the on-site and off-site disposal alternatives. Based on consultation with USF&WS and other cooperating agencies, the long-term benefits to endangered fish species as a result of remediation would outweigh the potential discountable short-term effects on terrestrial consultation species.

During the pre-remediation phase (within 10 years of the ROD), DOE would continue interim actions to reduce the risk to endangered fish. DOE projects that remedial actions would reduce concentrations of contaminants to levels that would no longer pose a risk that could result in a "take." This would require from 10 to 80 years following the ROD for on-site disposal, and from 10 to 75 years following the ROD for off-site disposal. Remedial actions would continue until contaminant concentrations no longer posed a risk under natural conditions. This post-remediation phase is currently projected to commence at approximately 80 years after the ROD for on-site disposal and approximately 75 years after the ROD for off-site disposal.

In a comparison of ground water remediation under the disposal alternatives, off-site disposal would be slightly more favorable for aquatic consultation species.

No Action Alternative

No adverse effects on terrestrial species would be likely to occur at off-site disposal or borrow locations or along transportation routes under this alternative. No adverse impacts to terrestrial species would be likely to occur as a result of historical site operations (i.e., elevated contaminant concentrations in surface water). However, adverse impacts caused by historical site operations would continue to affect endangered fish species and critical habitat. This unmitigated effect would likely result in a long-term "take" and would not be consistent with USF&WS recovery plans.

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- National Parks Service, Canyonlands National Park
- National Parks Service, Arches National Park
- Utah Department of Wildlife Resources, Moab